Risk Complexity:
The Arctic Offshore as a Case Study

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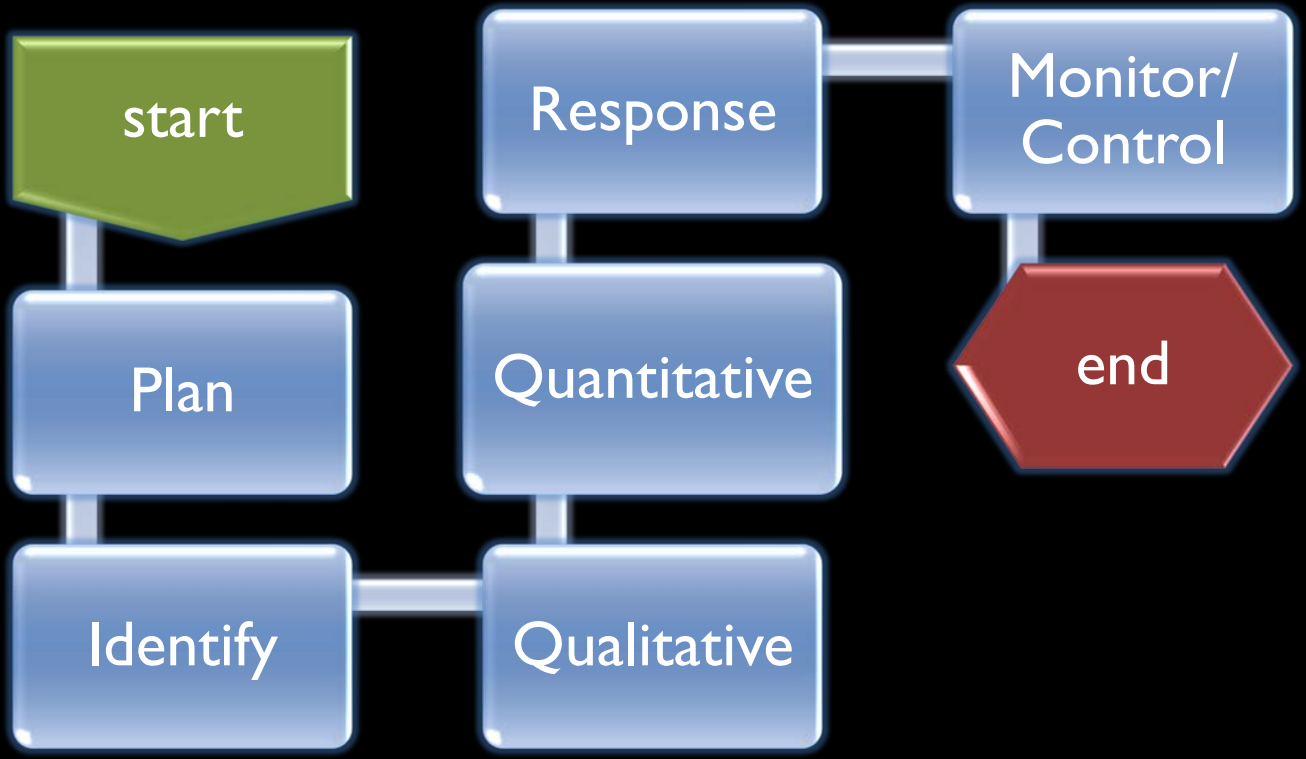
Research Objectives:

1. To critically examine existing risk management processes for identifying risks in complex projects

2. To apply these processes to the case study of Arctic offshore projects

- Uncertain event or condition
- known or unknown
- likelihood * impact

Risk management processes



How is Risk Management actually conducted?

- Not done consistently
- Lack of expertise
- Lack of support
- Adds to scope, time and costs
- Underestimate complexities

75%

Linear,

rational

Premise of our argument:

Conventional risk management tools and training are *inadequate* to address complexity


Wicked Problems
Adaptive
Unstructured
Novel
No final solution
Different stakeholder values
complex

Wicked Problems- Brief Context

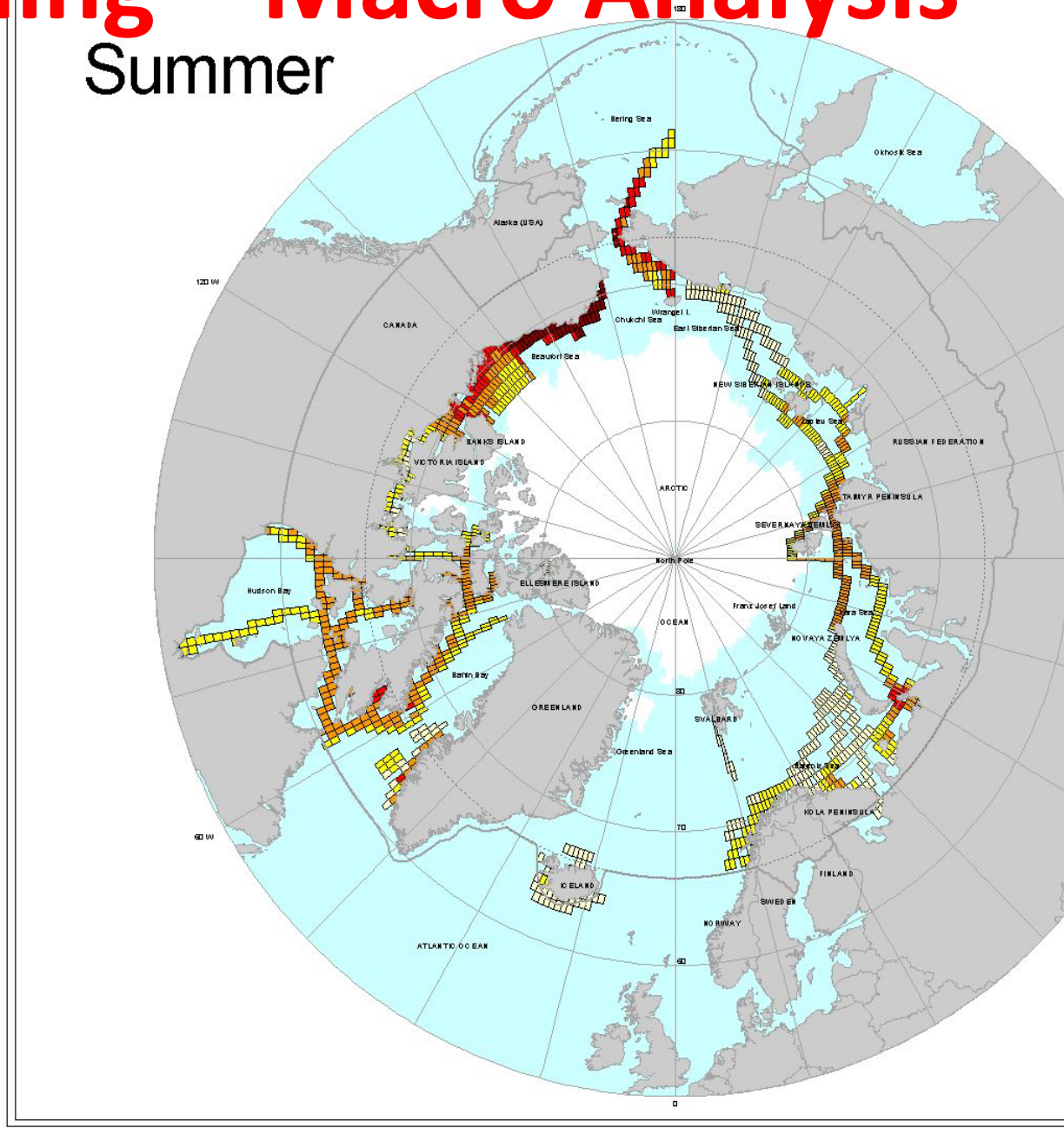
- Developed by Rittel & Weber in 1970s
- From social planning
- applied in different disciplines

1. MACRO: How are wicked problem characteristics reflected in offshore resource development projects?

2. MICRO: How do various stakeholders perceive, define, and identify risk?

Main Finding – Macro Analysis

- ✓Unique
- ✓Complex
- ✓Opposing stakeholder values



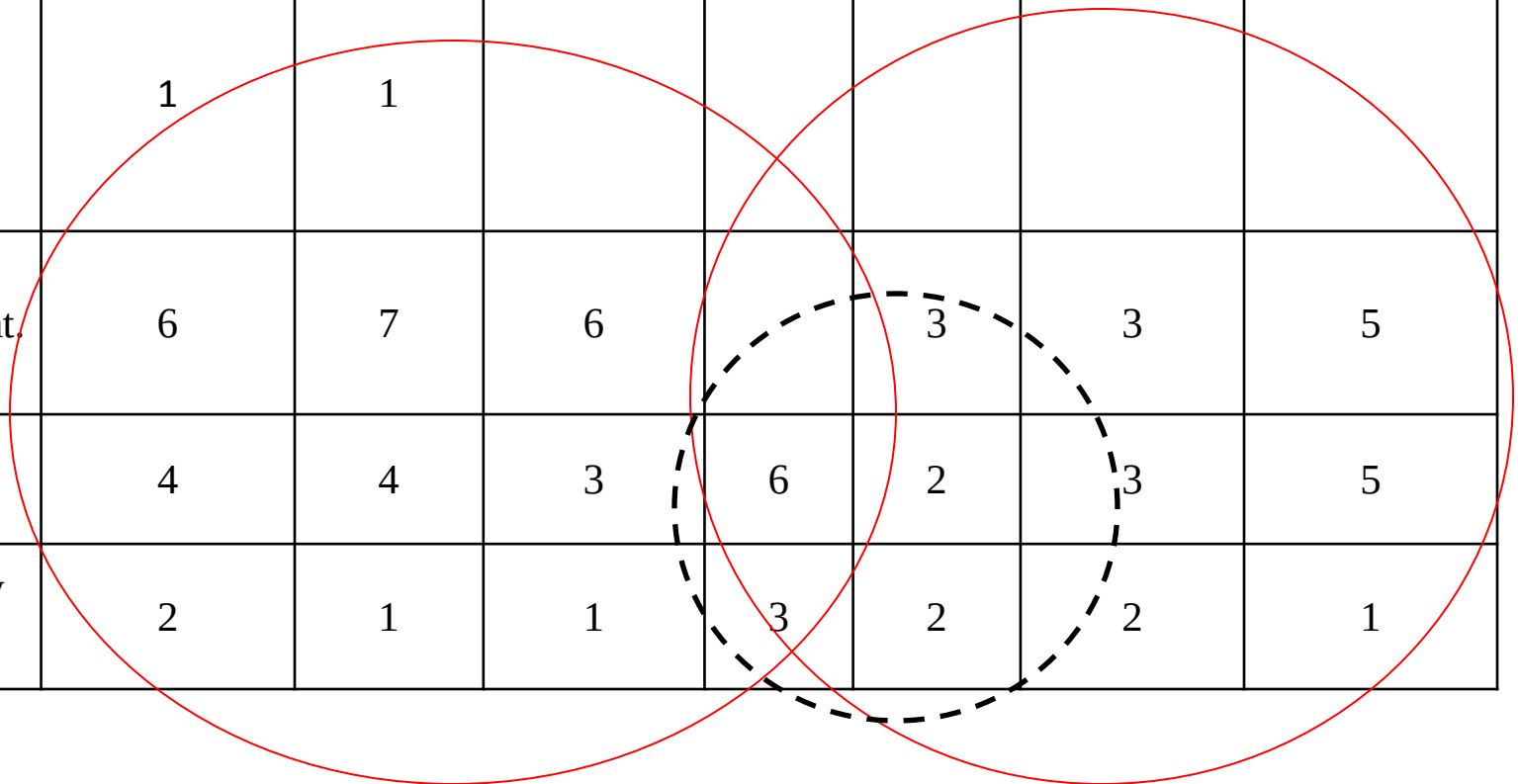
SEMINAR SERIES, FALL 2010 - SPRING 2011:

Defining Risk in Arctic Offshore Resource Development

MICRO Analysis based on 5 Risk paradigms

- Probabilistic- deterministic: technical-engineering design perspective
- Traditional risk assessment: process and expert based (qualitative & quantitative)
- Holistic: multidisciplinary
- Precautionary: risk averse
- Cognitive Psychology of Decision Making: Risk as a Feeling

	Quantitative - hard	Qualitative - soft					Complemen-tary
Data Sources	**Geophysi-cal, metocean and technical**	**Expert judge-ment**	**Lessons Learned**	**local know-ledge**	**public testimo -ny**	**social science research - interviews ,**	**Systems modelling**
Probabilistic-Deterministic (1)	1	1					
Traditional Risk Assessmt. (9)	6	7	6		3	3	5
Holistic (8)	4	4	3	6	2	3	5
Precautionary (4)	2	1	1	3	2	2	1



Analysis based on Risk attitude

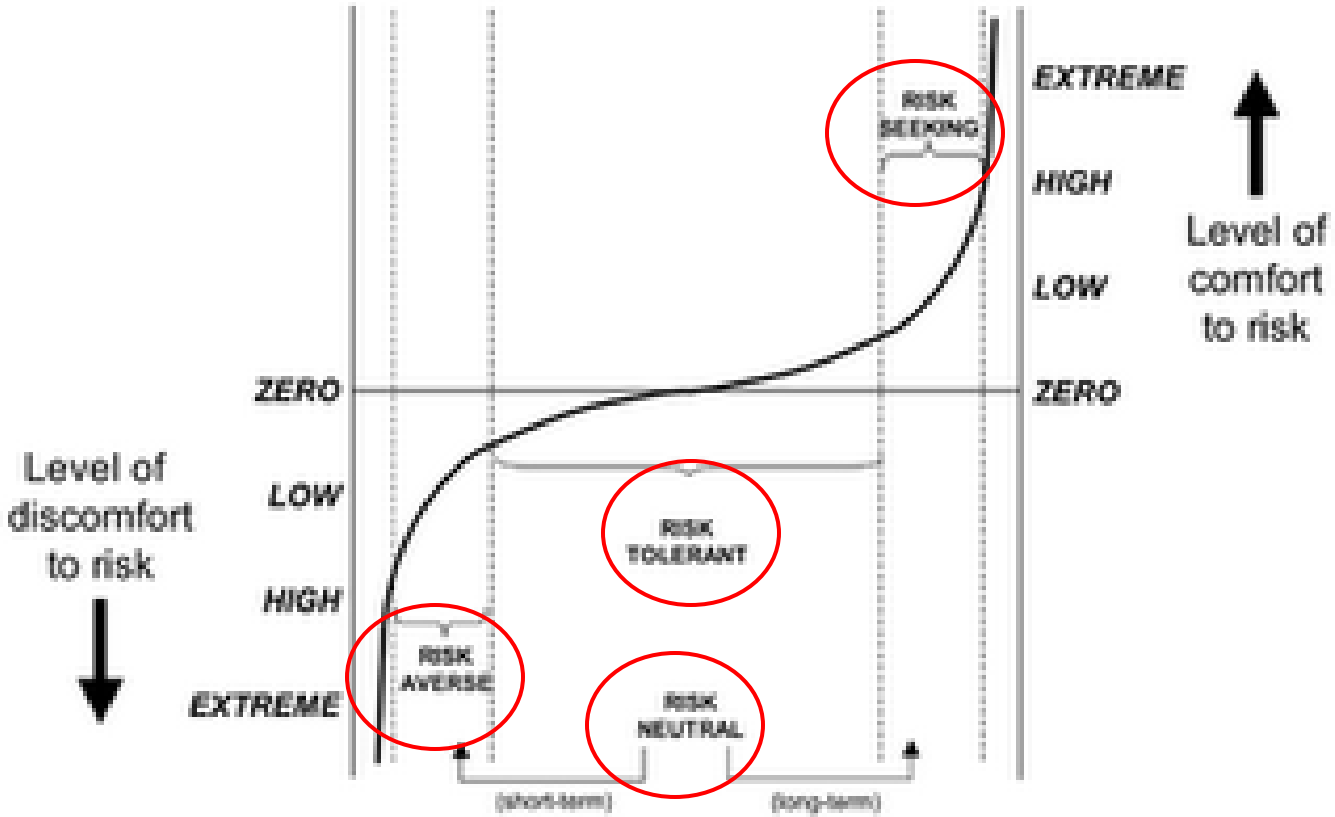
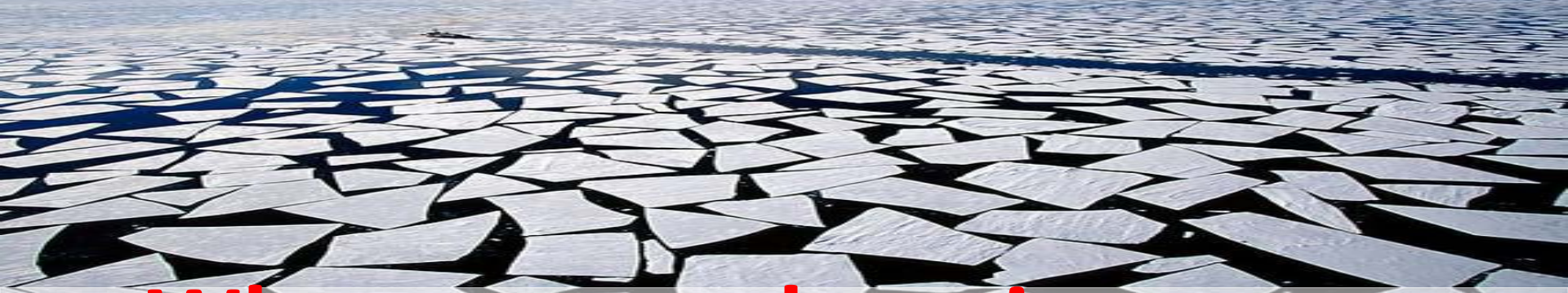


Figure 1.2: Risk Attitude Spectrum
(adapted from Hillson and Murray-Webster 2007)

Source: http://pmreviews.org/2010/07/22/understanding-risk-attitude-and-tolerance/

Findings from Micro-Analysis

- Risks definitions vary among stakeholder groups
- Different domains and familiarity levels with risk
- systematic biases in using tools and expert judgment



What can we do to improve the process?

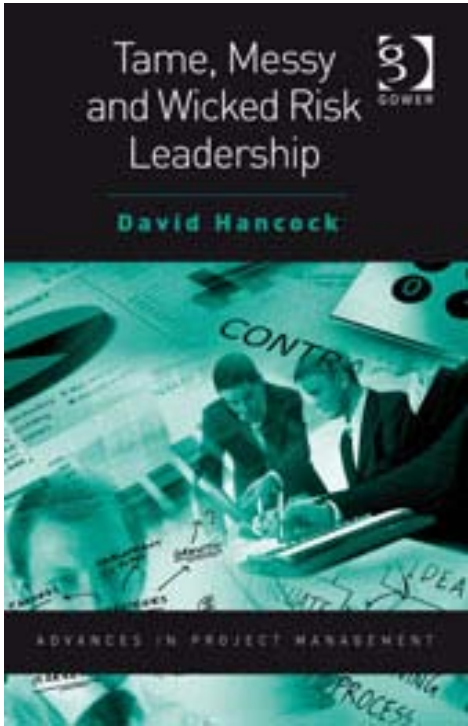
- Diverse risk management team (outsiders to mitigate systematic biases)
- New collective tools to identify & structure definitions
- New research frontiers…

Project Management of the Second Order (PM-2)

- New project management paradigm
- Includes theories from chaos, complexity and systems thinking
- Extension of traditional framework
- Won national and international research awards

Risk Leadership

- Risk management competency
- Hancock, UK (November, 2010)
- Reflective listening
- Project framing within social context
- Adaptive process
- Risk management = value creation
- Includes wicked problem framework categorization



What can we learn for the Arctic Offshore?

- Know stakeholders and their definitions

- Recognize limitations of existing risk management

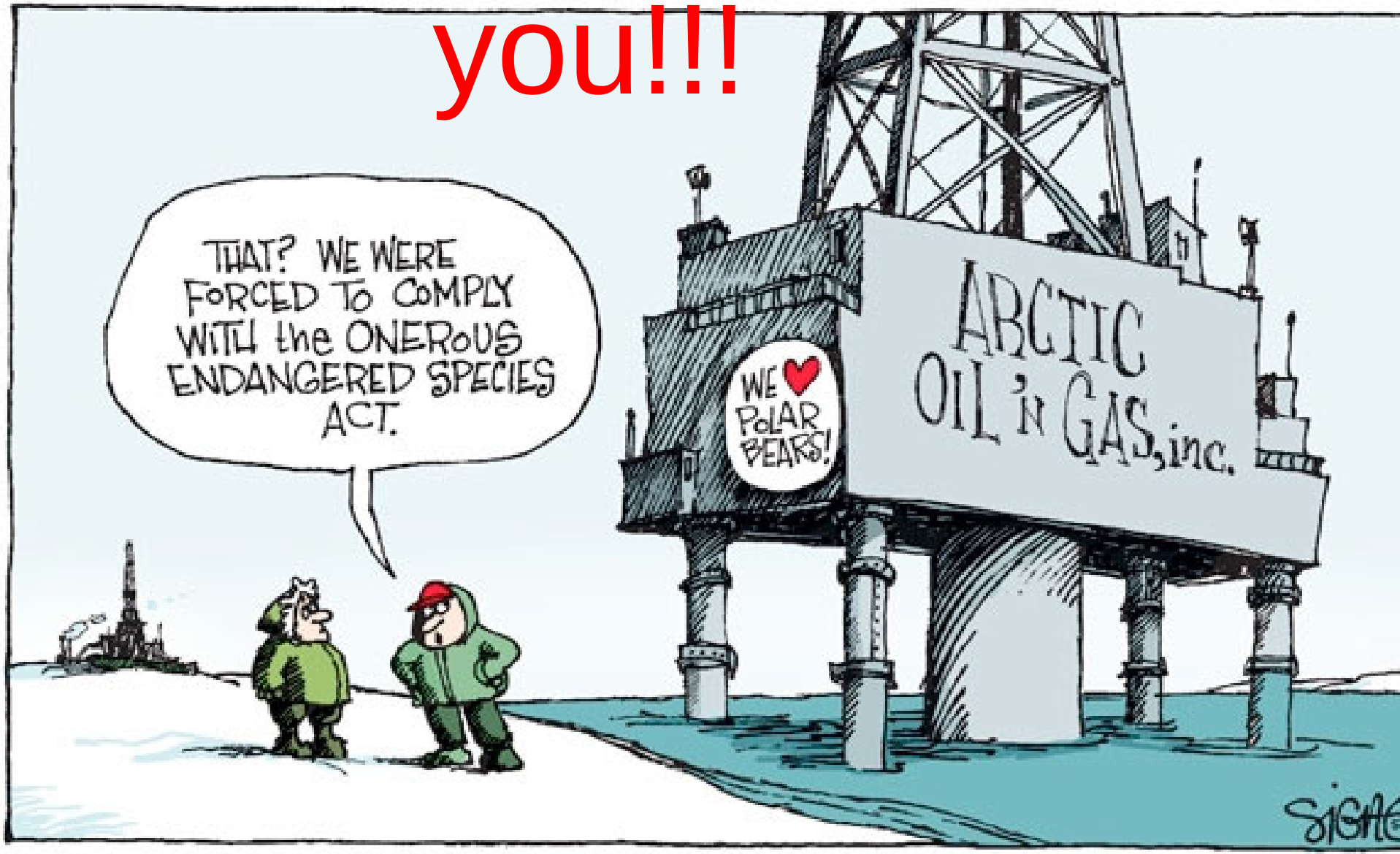
- Wicked problem concept offers systems view and new tools (PM-2; risk leadership)

- unknowns & consensus building

Risk assessment and management will never be ***perfect***!

Humble **and** ***vigilant*** **approach**

Thank you!!!


THAT? WE WERE FORCED TO COMPLY WITH the ONEROUS ENDANGERED SPECIES ACT.
WE ♥ POLAR BEARS!
ARCTIC OIL 'N GAS, inc.

Seminar website

Podcasts and powerpoints of all the presentations are available at:

http://www.iarc.uaf.edu/NX2020/seminar-defining-risk-in-arctic